

## CLAIMS

- 1 1. An optical switch/modulating device comprising:  
2 a pump waveguide that provides a pump light to said switch/modulating device;  
3 and  
4 a waveguide element positioned parallel to said pump waveguide that receives  
5 said pump light that causes said waveguide element to switch or modulate a signal light  
6 running through the pumped waveguide.
- 1 2. The optical switch/modulating device of claim 1, wherein said waveguide element is  
2 totally isolated.
- 1 3. The optical switch/modulating device of claim 1, wherein said waveguide element is  
2 surrounded by SiO<sub>2</sub>.
- 1 4. The optical switch/modulating device of claim 1, wherein said waveguide element and  
2 said pump waveguide form an active region.
- 1 5. The optical switch/modulating device of claim 1, wherein said pump waveguide  
2 comprises SiN.
- 1 6. The optical switch/modulating device of claim 1, wherein said pump waveguide  
2 comprises Si.
- 1 7. The optical switch/modulating device of claim 1, wherein said pump waveguide  
2 comprises a height of 200nm and width of 400nm.

1 8. The optical switch/modulating device of claim 1, wherein said pump waveguide  
2 comprises a single-mode behavior for a pump wavelength.

1 9. The optical switch/modulating device of claim 1, wherein said pump waveguide and  
2 waveguide element are surrounded by SiO<sub>2</sub>.

1 10. The optical switch/modulating device of claim 1 further comprising input and output  
2 waveguides.

1 11. The optical switch/modulating device of claim 10, said input and output waveguides  
2 comprise Si.

1 12. The optical switch/modulating device of claim 10, wherein said input and output  
2 waveguides are surrounded by SiO<sub>2</sub>.

1 13. A method of forming an optical switch/modulating device comprising:  
2 providing a pump waveguide that provides a pump light to said  
3 switch/modulating device; and  
4 positioning a waveguide element parallel to said pump waveguide that receives  
5 said pump light that causes said waveguide element to switch or modulate a signal light  
6 running through the pumped waveguide.

1 14. The method of claim 13, wherein said waveguide element is totally isolated.

1 15. The method device of claim 13, wherein said waveguide element is surrounded by  
2 SiO<sub>2</sub>.

1 16. The method of claim 13, wherein said waveguide element and said pump waveguide  
2 form an active region.

1 17. The method of claim 13, wherein said pump waveguide comprises SiN.

1 18. The method of claim 13, wherein said waveguide element comprises Si.

1 19. The method of claim 13, wherein said pump waveguide comprises a height of 200nm  
2 and width of 400nm.

1 20. The method of claim 13, wherein said pump waveguide comprises a single-mode  
2 behavior for a pump wavelength.

1 21. The method of claim 13, wherein said pump waveguide and waveguide element are  
2 surrounded by SiO<sub>2</sub>.

1 22. The method of claim 13 further comprising providing input and output waveguides.

1 23. The method of claim 20, said input and output waveguides comprise Si.

1 24. The method of claim 16, wherein said input and output waveguides are surrounded  
2 by SiO<sub>2</sub>.